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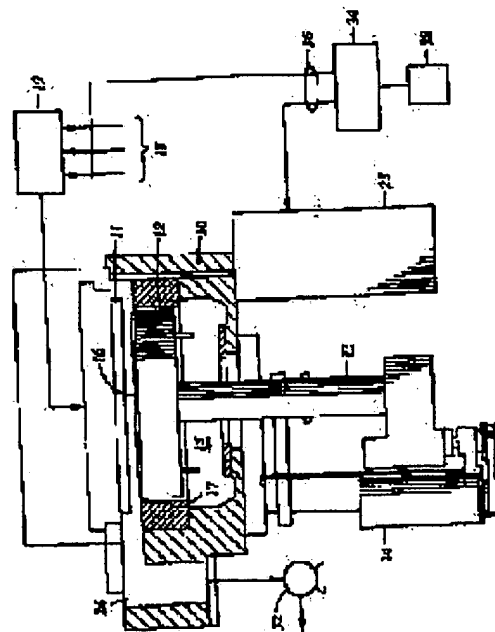
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(54) PLASMA TREATMENT FOR STRENGTHENING ADHESION OF CARBON- CONTAINING LAYER AND MINIMIZING OXIDATION OF THE LAYER

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the oxidation resistance or loss resistance of a film by using a processing mode for generating treatment plasma or the treatment plasma.

SOLUTION: The analytical recording data of electron spectroscopy/X-ray photoelectron spectro-scanning for chemical analysis performed on the variation of the chemical composition and coupling structure of an SiC layer, which is deposited on a dielectric layer and exposed to treatment plasma, such as He plasma and N₂O plasma are produced. As a result, the coupling structure is fixed through the He plasma treatment. The surface composition of the SiC layer is changed by N₂O plasma treatment and becomes to contain many C-C or C-H couplings and in addition, protects Si dangling couplings or other dangling couplings. The coupling variation on the surface strengthens adhesion of the SiC layer to the next layer. N₂O oxidizes the thin portion of the layer through controlled exposure and forms a surface having a higher resistance with respect to deeper oxidation as compared with an untreated layer.



LEGAL STATUS

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